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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/814,116

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Alan K. Prichard

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EXAMINER

FERGUSON, MICHAEL P

ART UNIT

PAPER NUMBER

3679

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/17/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/814,116

Applicant(s)

PRICHARD, ALAN K.

Examiner

Michael P. Ferguson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29,31-45 and 47-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29,31-45 and 47-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 48 and 50 are objected to because of the following informalities:
Claim 48 (line 1) recites "The system of". It should recite --The aircraft of--.
Claim 48 (line 5) recites "the system". It should recite --the aircraft--.
Claim 50 (line 1) recites "The system of". It should recite --The aircraft of--.
For the purpose of examining the application, it is assumed that appropriate correction has been made.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
3. Claims 29,31-39,41-45,47,49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gapp et al. (US 3,848,389) in view of Wolnek (US 6,375,120).
As to claims 29 and 34, Gapp et al. disclose a system of joined structures, comprising:
a first structure 1 having a first aperture, the first aperture having a first interior surface and a first minimum radial extent;
a second structure 2 having a second aperture in a metallic material (metallic cross-section; Figure 1), the second aperture having a second interior surface and a

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second minimum radial extent at least approximately the same as the first minimum radial extent; and

a coupling device **4** having a first shank section **9** extending through the first aperture and a second shank section **8** extending through the second aperture, but not extending into the first aperture, the first section of the coupling device having at least one of a hardness, toughness, and density greater than that of the second shank section of the coupling device, and wherein a portion of the second shank section has a greater radial extent than the first shank section;

wherein the portion of the second shank section **8** applies a first radial force to the second interior surface and the first shank section **9** applies at least approximately no radial force to the first interior surface; and

the material proximate to the first aperture is undamaged (Figure 1).

Gapp et al. fail to disclose a system wherein the first structure is a composite material; wherein the composite material includes a carbon fiber material; and wherein the second structure is aluminum.

Wolnek teaches a system wherein a first structure **72** is a composite material; wherein the composite material includes a carbon fiber material, and a second structure **40,44** is aluminum; the carbon fiber material and aluminum providing for lightweight structures with high strength and rigidity (Figure 6, column 3 lines 3-26, column 5 lines 37-61). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system as disclosed by Gapp et al. to have a first structure made of a composite material, and a second structure made of

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aluminum as taught by Wolnek in order to provide for lightweight structures with high strength and rigidity.

As to claim 31, Gapp et al. disclose a system wherein the first shank section 9 is not in contact with the first interior surface (Figure 1).

As to claim 32, Gapp et al. disclose a system wherein the coupling device includes a rivet 4 (Figure 1).

As to claim 33, Gapp et al. disclose a system wherein the coupling device 4 includes a metallic material.

As to claim 35, Gapp et al. disclose a system wherein the first shank section 9 of the coupling device 4 is connected to a head 3, and wherein the first aperture includes a countersunk portion for receiving the head (Figure 1).

As to claim 36, Gapp et al. disclose a system wherein the first shank section 9 of the coupling device 4 is connected to a head 3, and wherein the head has a radial extent greater than a radial extent of at least a portion of the first aperture (Figure 1).

As to claim 37, Gapp et al. disclose a system wherein the second shank section 8 of the coupling device 4 is connected to a tail 7, the tail extending out of the second aperture, the tail having a radial extent greater than a radial extent of at least a portion of the second aperture (Figure 1).

As to claim 38, Gapp et al. disclose a system wherein:

the first shank section 9 of the coupling device 4 is connected to a head 3, the head having a radial extent greater than a radial extent of at least a portion of the first aperture; and

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wherein the second shank section **8** of the coupling device is connected to a tail **7**, the tail extending out of the second aperture, the tail having a greater radial extent than a radial extent of at least a portion of the second aperture (Figure 1).

As to claim 39, Gapp et al. disclose a system wherein:

the first shank section **9** of the coupling device **4** is connected to a head **3**, the head having a radial extent greater than a radial extent of at least a portion of the first aperture; and

wherein the second shank section **8** of the coupling device is connected to a tail **7**, the tail extending out of the second aperture, the tail having a greater radial extent than a radial extent of at least a portion of the second aperture; and wherein the first and second structures are clamped together by the head and the tail (Figure 1).

As to claim 41, Gapp et al. disclose a system comprising a vehicle, and wherein the coupling device, the first structure, and the second structure are installed in the vehicle (column 1 lines 8-11).

As to claims 42 and 44, Gapp et al. disclose a system of joined structures, comprising:

a first structure **1** having a first aperture, the first aperture having a first interior surface and a first minimum radial extent;

a second structure **2** having a second aperture in a metallic material (metallic cross-section; Figure 1), the second aperture having a second interior surface and a second minimum radial extent at least approximately the same as the first minimum radial extent; and

a coupling device **4** having a first shank section **9** extending through the first aperture and a second shank section **8** extending through the second aperture, but not extending into the first aperture, the first shank section of the coupling device having at least one of a hardness, toughness, and density greater than that of the second shank section of the coupling device, and wherein a portion of the second shank section applies a first radial force to the second interior surface and the first shank section applies at least approximately no radial force to the first interior surface (Figure 1).

Gapp et al. fail to disclose a system wherein the first structure is a composite material; wherein the composite material includes a carbon fiber material; and wherein the second structure is aluminum.

Wolnek teaches a system wherein a first structure **72** is a composite material; wherein the composite material includes a carbon fiber material, and a second structure **40,44** is aluminum; the carbon fiber material and aluminum providing for lightweight structures with high strength and rigidity (Figure 6, column 3 lines 3-26, column 5 lines 37-61). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system as disclosed by Gapp et al. to have a first structure made of a composite material, and a second structure made of aluminum as taught by Wolnek in order to provide for lightweight structures with high strength and rigidity.

As to claim 43, Gapp et al. disclose a system wherein the portion of the second shank section **8** has a greater radial extent than the first shank section **9** (Figure 1).

As to claims 45 and 49, Gapp et al. disclose an aircraft, comprising:

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a first structure **1** having a first aperture, the first aperture having a first interior surface;

a second structure **2** having a second aperture in a metallic material (metallic cross-section; Figure 1), the second aperture having a second interior surface, the first aperture having a minimum radial extent at least approximately the same as a minimum radial extent of the second aperture; and

a coupling device **4** having a first shank section **9** extending through the first aperture and a second shank section **8** extending through the second aperture, but not extending into the first aperture, the first shank section of the coupling device having at least one of a hardness, toughness, and density greater than that of the second shank section of the coupling device, and wherein a portion of the second shank section has a greater radial extent than the first shank section;

wherein the portion of the second shank section **8** applies a first radial force to the second interior surface and the first shank section **9** applies at least approximately no radial force to the first interior surface; and

the material proximate to the first aperture is undamaged (Figure 1).

Gapp et al. fail to disclose an aircraft wherein the first structure is a composite material; wherein the composite material includes a carbon fiber material; and wherein the second structure is aluminum.

Wolnek teaches an aircraft wherein a first structure **72** is a composite material, the composite material configured so that a small radial force to the first internal surface will damage the composite material; wherein the composite material includes a carbon

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fiber material, and a second structure **40,44** is aluminum; the carbon fiber material and aluminum providing for lightweight structures with high strength and rigidity (Figure 6, column 3 lines 3-26, column 5 lines 37-61). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the aircraft as disclosed by Gapp et al. to have a first structure made of a composite material, and a second structure made of aluminum as taught by Wolnek in order to provide for lightweight structures with high strength and rigidity.

As to claims 47 and 50, Gapp et al. disclose an aircraft, comprising:

a first structure **1** having a first aperture, the first aperture having a first interior surface and a first minimum radial extent;

a second structure **2** including a metallic material (metallic cross-section; Figure 1), the second structure having a second aperture in the metallic material, the second aperture having a second interior surface and a second minimum radial extent at least approximately the same as the first minimum radial extent; and

a coupling device **4** having a first shank section **9** extending through the first aperture and a second shank section **8** extending through the second aperture, but not extending into the first aperture, the first shank section of the coupling device having at least one of a hardness, toughness, and density greater than that of the second shank section of the coupling device, wherein:

a portion of the second shank section has a greater radial extent than the first shank section so that the portion of the second shank section applies a first radial force

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to the second interior surface and the first shank section applies at least approximately no radial force to the first interior surface; and wherein:

the material proximate to the first aperture is undamaged; and wherein:

the first shank section of the coupling device is connected to a head **3**, the head having a radial extent greater than a radial extent of at least a portion of the first aperture; and

wherein the second shank section of the coupling device is connected to a tail **7**, the tail extending out of the second aperture, the tail having a greater radial extent than a radial extent of at least a portion of the second aperture (Figure 1).

Gapp et al. fail to disclose an aircraft wherein the first structure is a composite material; wherein the composite material includes a carbon fiber material; and wherein the second structure is aluminum.

Wolnek teaches an aircraft wherein a first structure **72** is a composite material; wherein the composite material includes a carbon fiber material, and a second structure **40,44** is aluminum; the carbon fiber material and aluminum providing for lightweight structures with high strength and rigidity (Figure 6, column 3 lines 3-26, column 5 lines 37-61). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the aircraft as disclosed by Gapp et al. to have a first structure made of a composite material, and a second structure made of aluminum as taught by Wolnek in order to provide for lightweight structures with high strength and rigidity.

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4. Claims 40 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gapp et al. in view of Wolnek as applied to claims 29 and 47 above, and further in view of Bannink, Jr. (US 4,556,591).

As to claim 40, Gapp et al. in view of Wolnek fail to disclose a system comprising a sealant proximate to the coupling device.

Bannink, Jr. teaches a system comprising a sealant **30** proximate to a coupling device **28**; the sealant providing a non-conductive connection between first and second structures **16,18** and preventing corrosion of the coupling device (Figure 2, column 4 lines 25-29). Accordingly, it would have been obvious for one having ordinary skill in the art at the time the invention was made to have modified the system as disclosed by Gapp et al. in view of Wolnek to have a sealant as taught by Bannink, Jr. in order to providing a non-conductive connection between first and second structures and to prevent corrosion of the coupling device.

As to claim 48, Gapp et al. disclose an aircraft wherein the coupling device **4** includes a metallic rivet; the first aperture includes a countersunk portion for receiving the head **3** (Figure 1).

Gapp et al. fail to disclose an aircraft wherein the first structure is a composite material; wherein the composite material includes a carbon fiber material; and wherein the second structure is aluminum.

Wolnek teaches a system wherein a first structure **72** is a composite material; wherein the composite material includes a carbon fiber material, and a second structure **40,44** is aluminum; the carbon fiber material and aluminum providing for lightweight

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structures with high strength and rigidity (Figure 6, column 3 lines 3-26, column 5 lines 37-61). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the aircraft as disclosed by Gapp et al. to have a first structure made of a composite material, and a second structure made of aluminum as taught by Wolnek in order to provide for lightweight structures with high strength and rigidity.

Gapp et al. in view of Wolnek fail to disclose an aircraft comprising a sealant proximate to the coupling device.

Bannink, Jr. teaches a system comprising a sealant **30** proximate to a coupling device **28**; the sealant providing a non-conductive connection between first and second structures **16,18** and preventing corrosion of the coupling device (Figure 2, column 4 lines 25-29). Accordingly, it would have been obvious for one having ordinary skill in the art at the time the invention was made to have modified the aircraft as disclosed by Gapp et al. in view of Wolnek to have a sealant as taught by Bannink, Jr. in order to providing a non-conductive connection between first and second structures and to prevent corrosion of the coupling device.

Response to Arguments

5. Applicant's arguments filed October 23, 2006 have been fully considered but they are not persuasive.

As to claims 29,42,45 and 47, Attorney argues that:

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Gapp et al. teaches away from a rivet that does not completely fill both holes in the structures being joined, such configuration, as shown in Figure 1 of Gapp et al., being unsatisfactory.

Examiner disagrees. Gapp et al. disclose such rivets, as shown in Figure 1 of Gapp et al., as a first embodiment of the invention; each of the disclosed embodiments providing a high strength and satisfactory rivet, all of the disclosed embodiments having their advantages and being novel and distinct with respect to one another (column 1 lines 43-62, column 2 lines 8-20, column 4 lines 16-24). Accordingly, one of ordinary skill in the art is able use such rivets in the known manner; and such embodiment is capable of being modified by one having ordinary skill in the art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Ferguson whose telephone number is (571)272-7081. The examiner can normally be reached on M-F (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached on (571)272-7087. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


MPF

01/05/07


Flemming Sæther
Primary Examiner



REPLACEMENT SHEET

1/5

Approved.
1/5/08

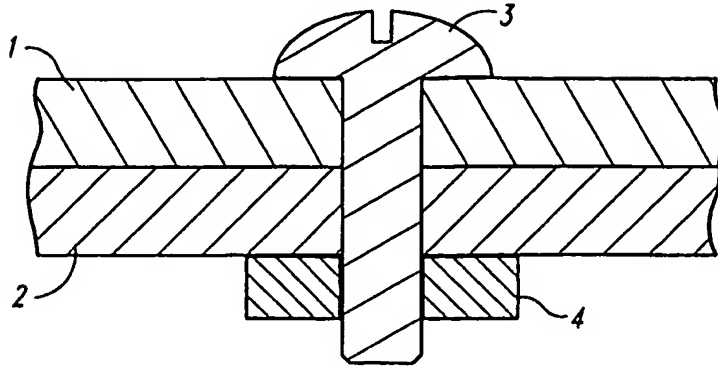


Fig. 1
(Prior Art)

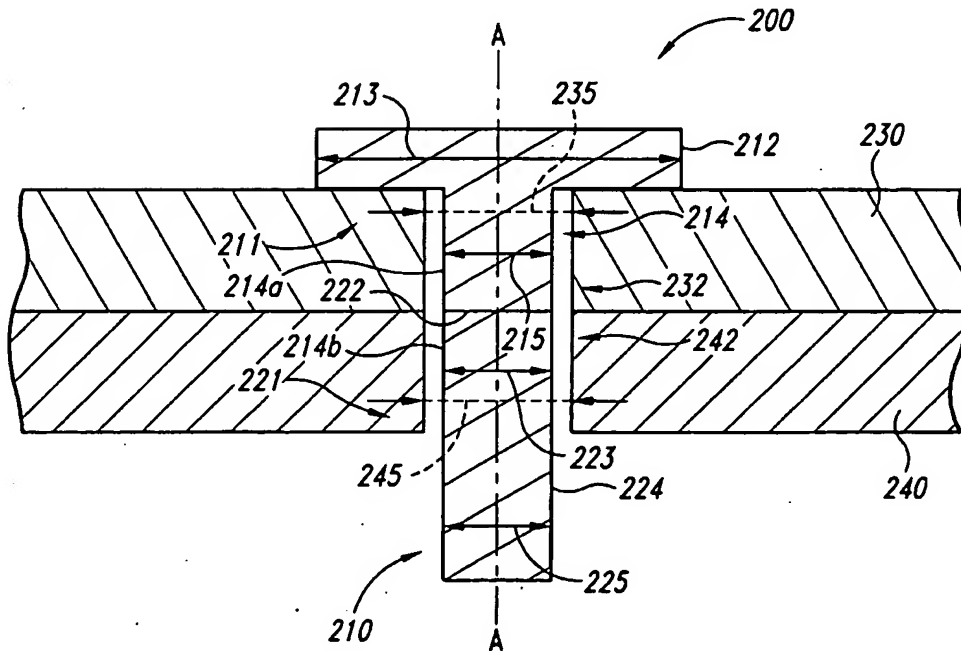


Fig. 2A